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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,065

06/15/2006

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11/03/2008

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EXAMINER

LEE, RIP A

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,065	<b>Applicant(s)</b> MIHAN, SHAHRAM	
	<b>Examiner</b> RIP A. LEE	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 5 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 5 and 7-9 is/are rejected.
- 7) ☒ Claim(s) 1 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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### DETAILED ACTION

This office action follows a response filed on July 21, 2008. Claims 1, 7, 8, and 9 were amended, and claims 2-4 and 6 were canceled. Claims 1, 5, 7, 8, and 9 are pending.

#### *Claim Objections*

1. Claim 1 is objected to because of the following informalities: The entire recitation, “Z<sup>A</sup> is as defined ... -SiR<sup>14A</sup><sub>3</sub>,” may be deleted from the claim since no such group exists in structure (IIIc) or structure (IIId); see page 3. Appropriate correction is required.
2. Claim 1 is objected to because of the following informalities: Atom M<sup>1</sup> in the description of bridging group R<sup>15A</sup> has not been defined; see page 4. Appropriate correction is required.
3. Claim 1 is objected to because of the following informalities: Substituent R<sup>19A</sup> in the description of heteroatomic moiety A<sup>A</sup> has not been defined; see page 4. Appropriate correction is required.
4. Claim 1 is objected to because of the following informalities: Substituent R<sup>18B</sup> may be deleted from the claim since no such group exists in either of structures (IVa) to (IVe); see page 6, line 10. Appropriate correction is required.
5. Claim 8 is objected to because of the following informalities: The entire recitation, “Z<sup>A</sup> is as defined ... -SiR<sup>14A</sup><sub>3</sub>,” may be deleted from the claim since no such group exists in structure (IIIc) or structure (IIId); see page 12. Appropriate correction is required.
6. Claim 8 is objected to because of the following informalities: Atom M<sup>1</sup> in the description of bridging group R<sup>15A</sup> has not been defined; see page 13. Appropriate correction is required.
7. Claim 8 is objected to because of the following informalities: Substituent R<sup>19A</sup> in the description of heteroatomic moiety A<sup>A</sup> has not been defined; see page 13. Appropriate correction is required.

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8. Claim 8 is objected to because of the following informalities: Substituent R<sup>18B</sup> may be deleted from the claim since no such group exists in either of structures (IVa) to (IVe); see page 15, line 10. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 1, 5, 7, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Epstein (U.S. 5,895,771) and Elder *et al.* (EP 573 403) in view of Ivanova *et al.* (*Chem. Eur. J.*, 2001) and Göres *et al.* (WO 99/50312; equivalent U.S. 6,583,238 relied upon for translation).

Epstein *et al.* discloses metallocene-based, olefin polymerization catalysts comprising metallocene, organoaluminum, and a fluorinated aluminate as the co-catalyst component. Metallocenes suitable for practicing the invention can be of the type described in EP 573 403 as having the formula (Cp')(Cp'')MQ<sub>k</sub> (col. 1, line 51 and col. 2, lines 3-8). Turning to the patent incorporated by reference, one finds that metallocenes represented by general formula (Cp')(Cp'')MQ<sub>k</sub> are bridged and are thus represented by formulas R''(C<sub>5</sub>R'<sub>4</sub>)<sub>2</sub>MeQ<sub>p</sub> (1) or R''(CpR<sub>n</sub>)(CpR'<sub>m</sub>)MeQ<sub>p</sub> (2); see page 3, lines 16 and 28 and page 4, lines 45-49. One skilled in the art would have found it obvious to use a bridged, stereorigid metallocene in order to prepare isotactic and syndiotactic polymer (page 2, line 11 - page 3, line 13).

Fluorinated aluminate anions have the formula [Al(OC(Ph)(CF<sub>3</sub>)<sub>2</sub>)<sub>4</sub>] and [Al(OC(Me)(CF<sub>3</sub>)<sub>2</sub>)<sub>4</sub>]. The reference does not disclose use of other fluorinated derivatives. Ivanova *et al.* discloses the "superweak" anion, [Al(OC(CF<sub>3</sub>)<sub>3</sub>)<sub>4</sub>], present in Li[Al(OC(CF<sub>3</sub>)<sub>3</sub>)<sub>4</sub>], that has poor Lewis base character. As seen in Figure 1, the fluoroalcohol derived from [Al(OC(CF<sub>3</sub>)<sub>3</sub>)<sub>4</sub>] is considerably less basic than those alcohols derived from the anions disclosed in Epstein *et al.*, and the routineer in the art readily attributes this to the presence of three electrophilic CF<sub>3</sub> groups. The combination of references would have suggested to one having ordinary skill in the art that Li[Al(OC(CF<sub>3</sub>)<sub>3</sub>)<sub>4</sub>], being structurally similar to those compounds disclosed in Epstein *et al.*, would function as co-catalyst for metallocene-based catalysts of

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Epstein *et al.* One of ordinary skill in the catalyst art would have been motivated to use  $\text{Li}[\text{Al}(\text{OC}(\text{CF}_3)_3)_4]$  as co-catalyst since the resulting anion  $[\text{Al}(\text{OC}(\text{CF}_3)_3)_4]$  has greater non-coordinating character than those disclosed in Epstein *et al.*, and therefore, would be better suited for making an active catalyst. Therefore, it would have been obvious to one having ordinary skill in the art to modify the catalyst of Epstein *et al.* using  $\text{Li}[\text{Al}(\text{OC}(\text{CF}_3)_3)_4]$  as the co-catalyst, and since said co-catalyst is structurally similar and contains an anion with greater non-coordinating character, one having ordinary skill in the art would have expected such a modification to produce an active polymerization catalyst with a high degree of success. A *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a compound, in the expectation that compounds similar in structure will have similar properties. *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979).

Epstein *et al.* does not teach use of inert carrier, however, at the time the instant invention was made, use of inert carrier for supporting metallocene catalysts was well-established practice in the art. Göres *et al.* discloses use of supported catalysts in order to reduce deposit formation during polymerization which leads to reactor fouling. Moreover, supported catalyst is required in gas phase polymerization processes (col. 1, lines 17-26). Thus, it would have been obvious to one having ordinary skill in the art to make a supported catalyst comprising a metallocene and  $\text{Li}[\text{Al}(\text{OC}(\text{CF}_3)_3)_4]$  co-catalyst in order to render the catalyst amenable for gas phase polymerization conditions and to reduce reactor fouling. Regarding preparation of supported catalyst, Göres *et al.* discloses calcination of silica support and subsequent treatment of the support with organometallic passivating agents. Metallocene and activator component are loaded onto the support in a subsequent step (col. 9, line 21 - col. 13, line 64). One having ordinary skill in the art would have found it obvious to carry out the routine process of preparing supported catalysts, as shown in Göres *et al.*, in order to make a supported catalyst of Epstein *et al.*, modified with the co-activator of Ivanova *et al.*, and one having ordinary skill in the art would have reasonably expected the supported catalyst to work exceptionally well in gas phase polymerization of olefins.

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### ***Response to Arguments***

11. The rejection of claims over Lipian *et al.* (U.S. 6,455,650), set forth in the previous office action dated January 17, 2008 has been overcome by amendment. The reference does not disclose the claimed metal complexes or catalyst support.

The rejection of claims over Epstein *et al.* (U.S. 5,895,771) in view of Ivanova *et al.* (*Chem. Eur. J.*, 2001) has been overcome by amendment.

The rejection of claims over Epstein *et al.* in view of Ivanova *et al.* and further in view of Göres *et al.* (WO 99/50312; U.S. 6,583,238) has been overcome by amendment.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu S. Jagannathan, can be reached at (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

/Rip A. Lee/  
Art Unit 1796

October 29, 2008

/Vasu Jagannathan/  
Supervisory Patent Examiner, Art Unit 1796